UTILISATION DES CIMENTS PHOSPHO-CALCIQUES DANS LES FRACTURES DES PLATEAUX TIBIAUX

DR DAVID FROHNMUELLER
DR CLAUDE SCHWARTZ

Service Orthopédie et traumatologie
Hôpital Civil de Colmar

SOTEST 2008 - COLMAR

Epidémiologie

- ~ 1 % des fractures
- ~ 8 % des fractures du sujet âgé (Hohl)
- 55-75 % au niveau du plateau latérale

Principes du traitement

FRACTURES ARTICULAIRES

- Réduction anatomique
- Mobilisation et une kinésithérapie précoce

Principes du traitement

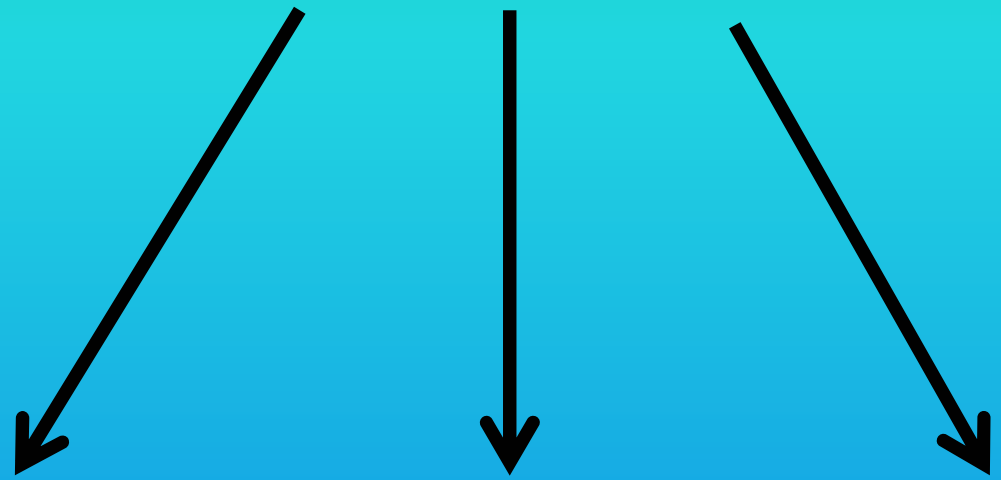
Réduction sous contrôle de la vue

- Arthrotomie ± arthroscopie

Fixation par ostéosynthèse stable

- Plaques, vis
- + greffe ou substitut

Choix de la greffe osseuse



Autogreffe

Allogreffe
(Xénogreffe)

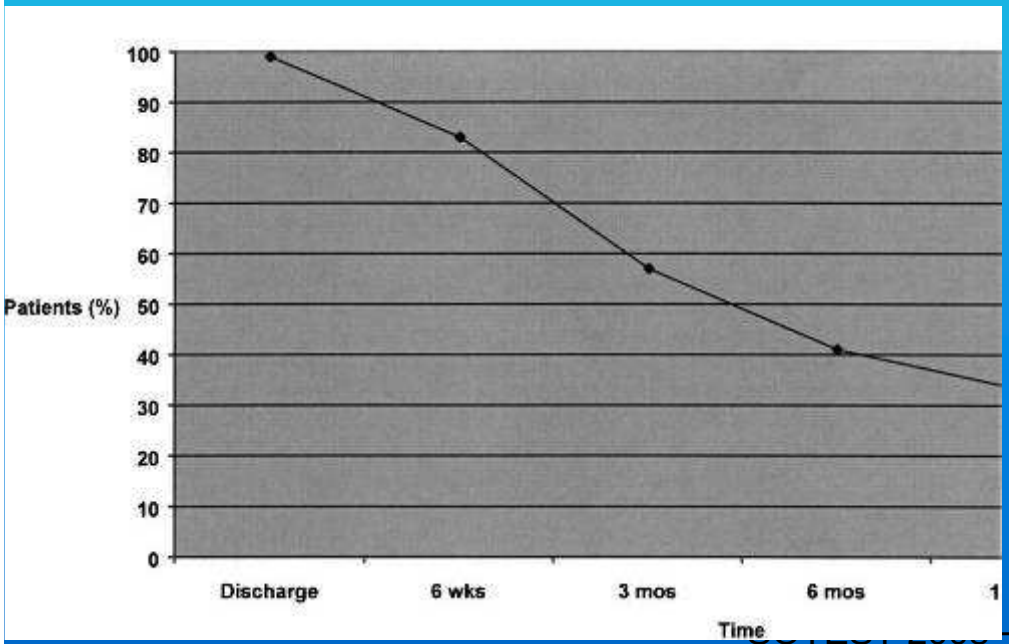
Substitut osseux
synthétique

CIMENTS PHOSPHOCALCIQUES

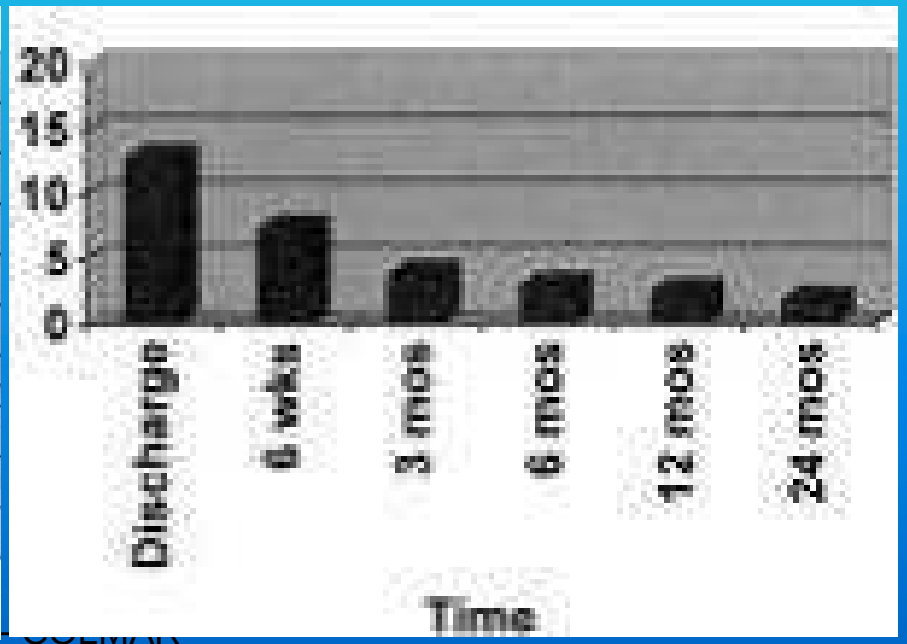
Iatrogénie de l'autogreffe

SASSO (2005): Iliac Crest Bone Graft Donor Site Pain After Anterior Lumbar Interbody Fusion. *J Spinal Disord Tech*

Patients symptomatiques

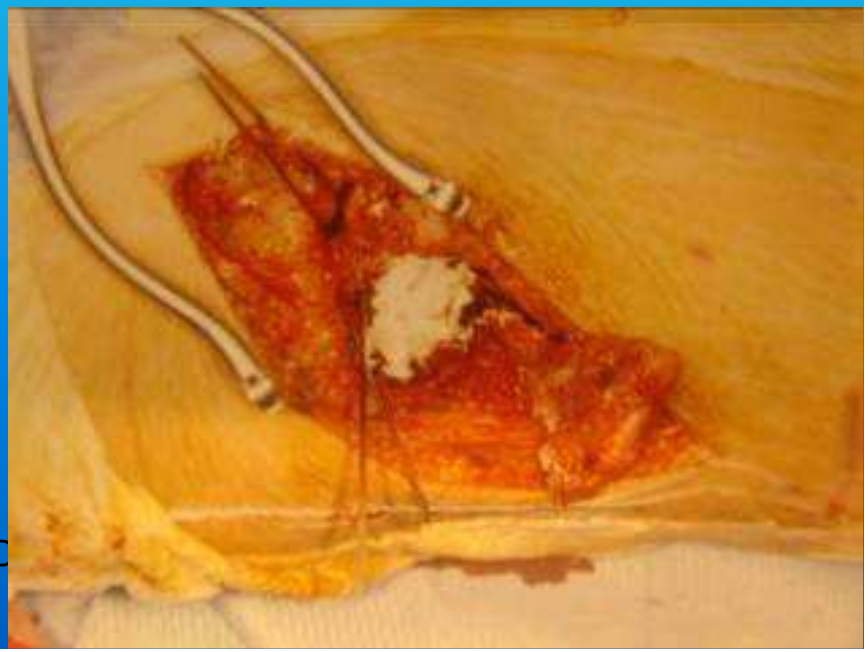


Intensité de la douleur



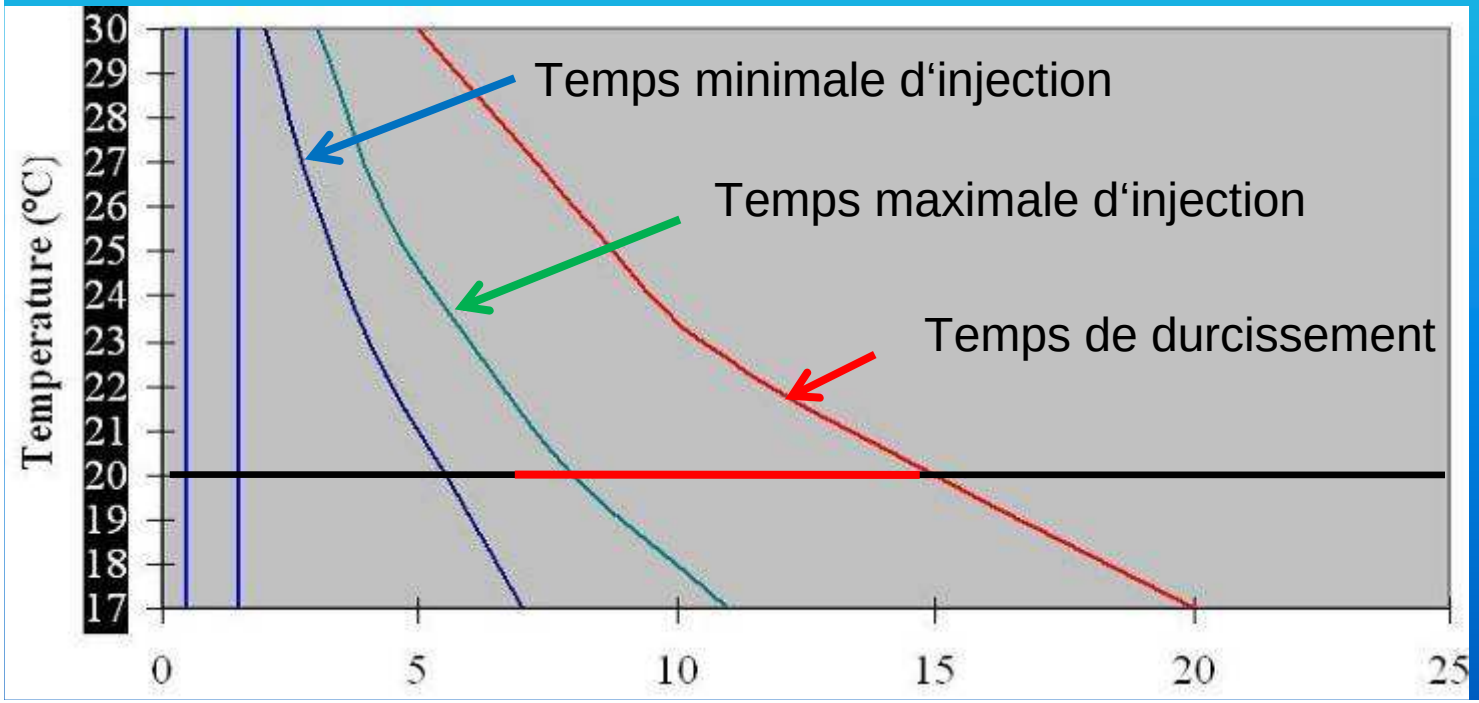
Technique

- Ostéosynthèse à foyer ouvert
  - Réduction anatomique par arthrotomie + broches
  - Fixation solide: ostéosynthèse + ciment



Préparation du ciment

- Respecter le mode d‘emploi
- Corrélation stœchiométrique
- Influence de la température

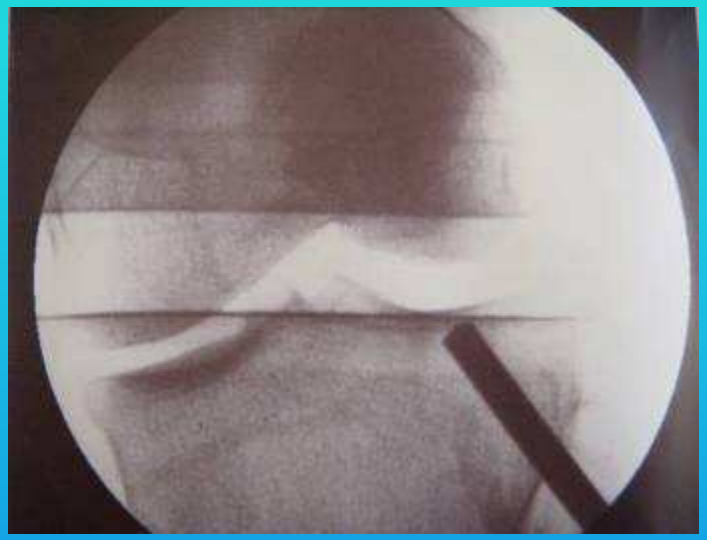


Injection du ciment

Vérifier la consistence

Injection du ciment

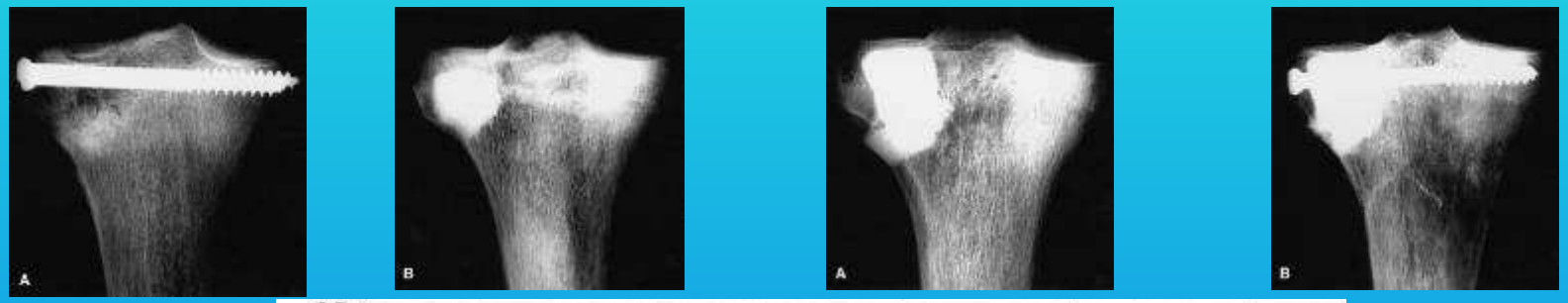
Injection sous controle
de la vue

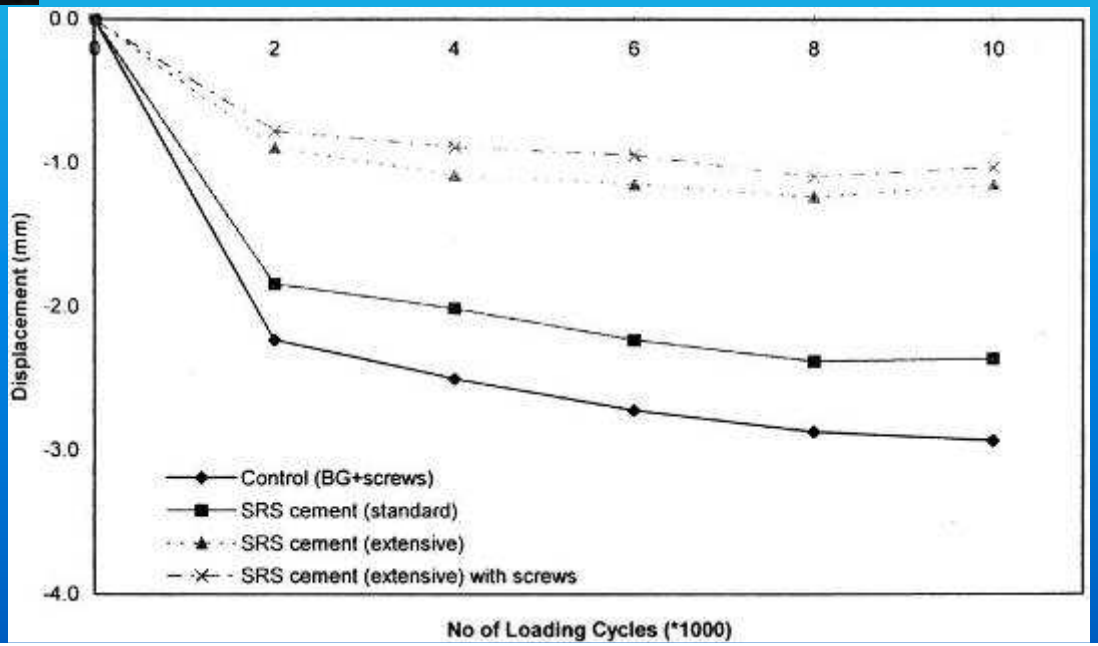


Vérifier le durcissement
avant la fermeture!

Biomécanique « in vitro »

Yetkinler (2001): Biomechanical Comparison of Conventional Open Reduction and Internal Fixation Versus Calcium Phosphate Cement Fixation of a Central Depressed Tibial Plateau Fracture. *Journal of Orthopaedic Trauma*



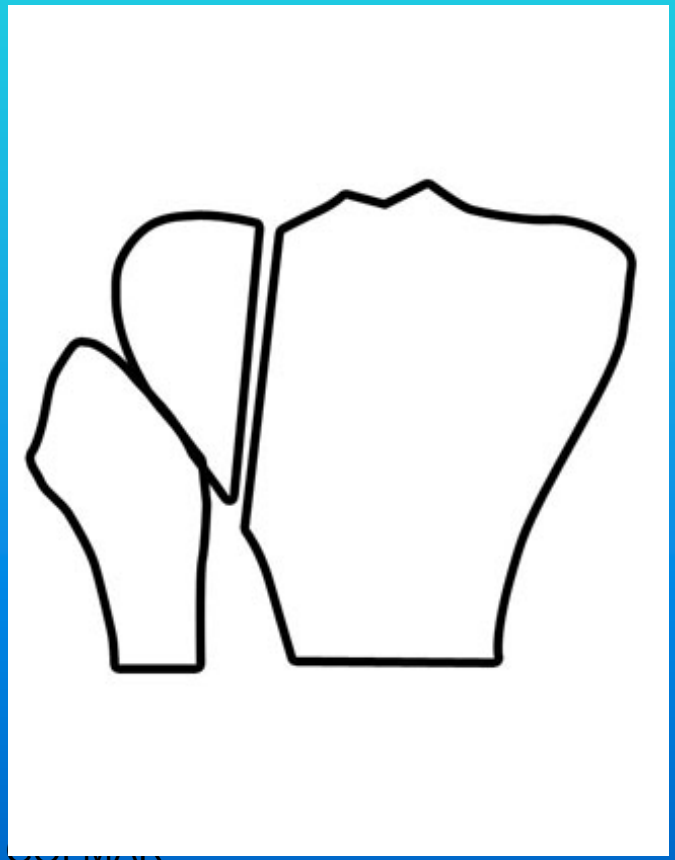


Classifications

- Duparc et Ficat (Rev Chir Orthop 1960)
- **Schatzker (Clin Orthop 1979)**
- Moore (Clin Orthop 1979)
- Honkonen (JBJS-B 1992
- AO (Müller, 1991)

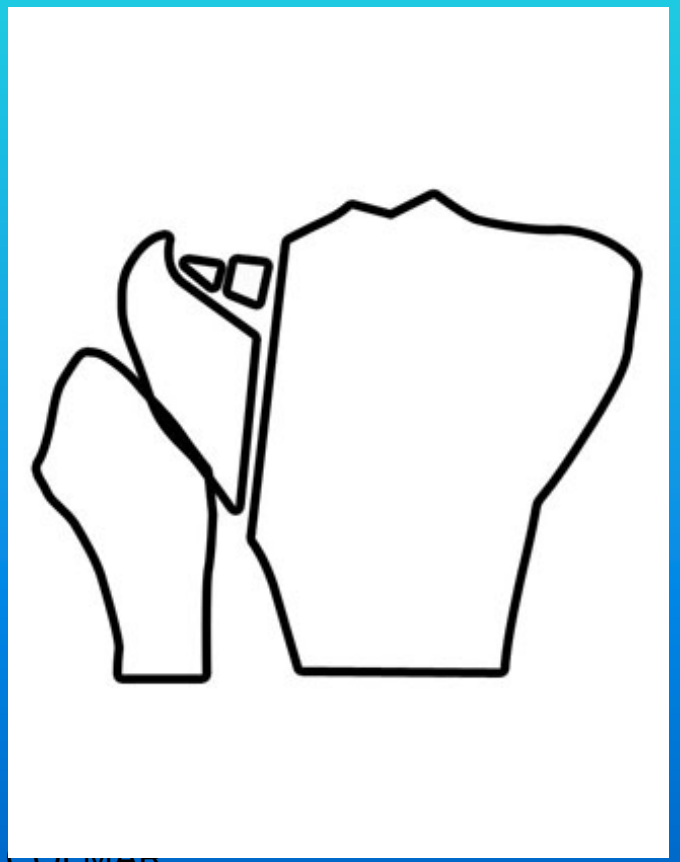
Classification de Schatzker

SCHATZKER I



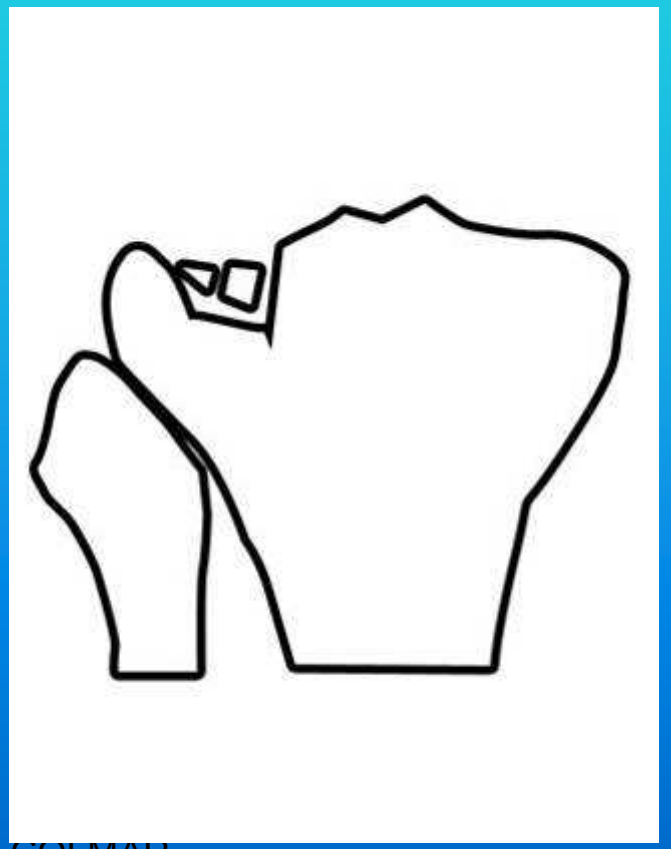
Classification de Schatzker

SCHATZKER II



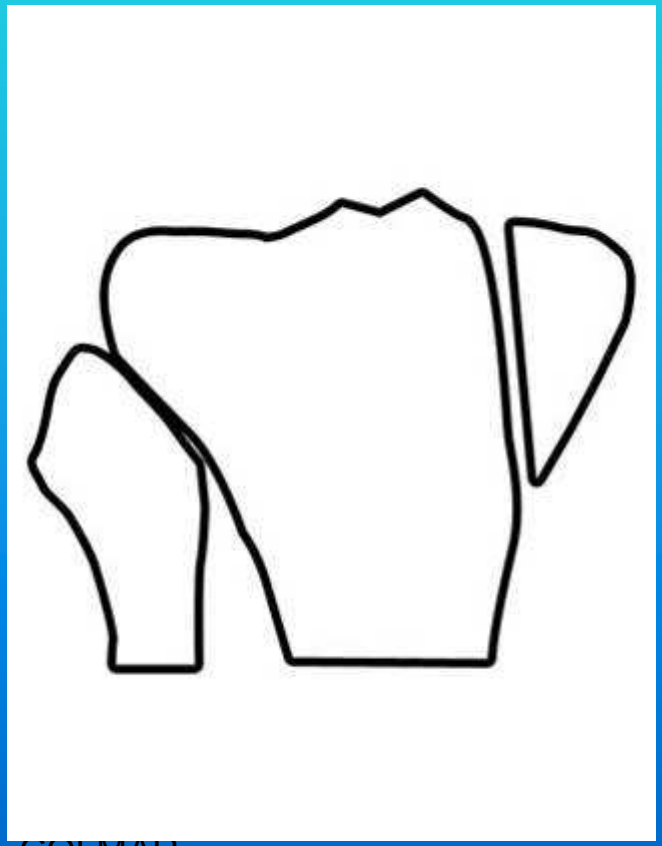
Classification de Schatzker

SCHATZKER III



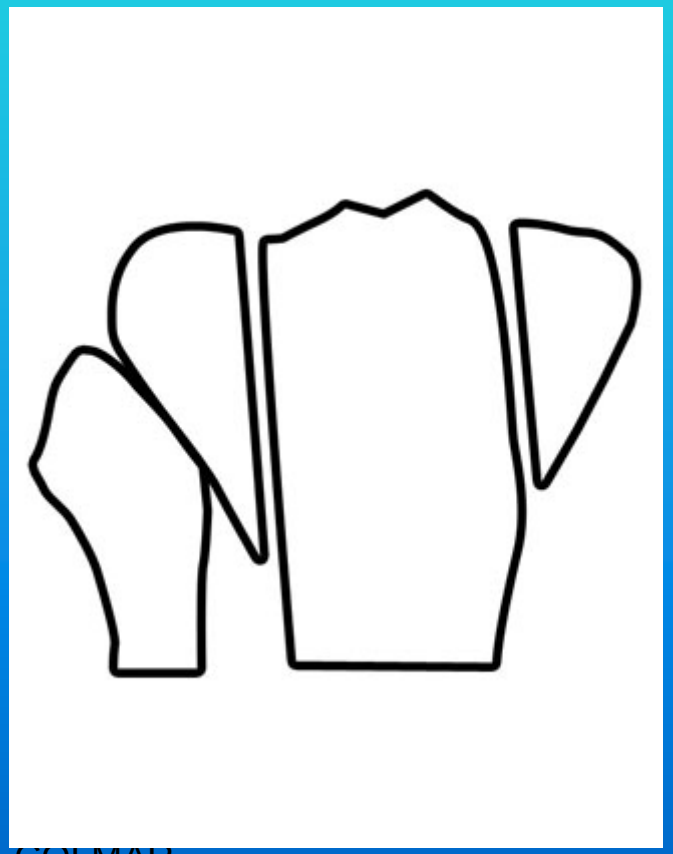
Classification de Schatzker

SCHATZKER IV



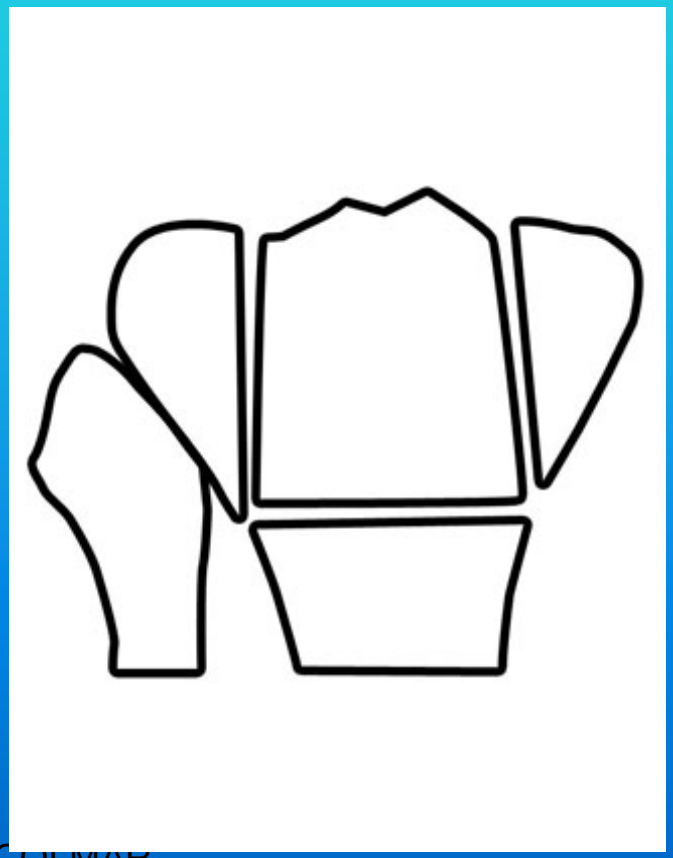
Classification de Schatzker

SCHATZKER V



Classification de Schatzker

SCHATZKER VI



La Série
MPR 6
RP
5cm
A
kV 140
GT 0.0
SL 3.0
W 2300
C 230 B60s
JEAN JACQUES H
CHU HAUTEPIERRE REYSS, JEAN JACQUES H
Somaris/5 3D S 4345
VA60B *18/10/56
F-SP
28/09/03
11:28:05.58
603 IMA 6
603 IMA 9

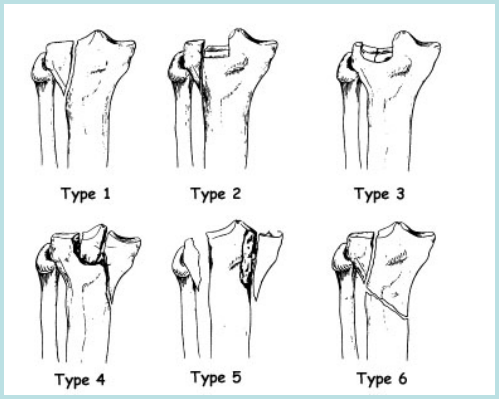
nom	sexe	age	date	Schatzker
oval	m	27	29/09/2004	2
bett	f		004	2
daes	m		005	2 + diaphyse
klei	f		005	3
bind	f		005	2
stah	f		005	5
flei	m		005	2
defa	f		005	2+ diaphyse
pari	f		006	3
bord	m		006	2
desl	f	53	04/12/2006	5
ceri	f	45	06/02/2007	3

12 fractures, fermées

2/3 de femmes

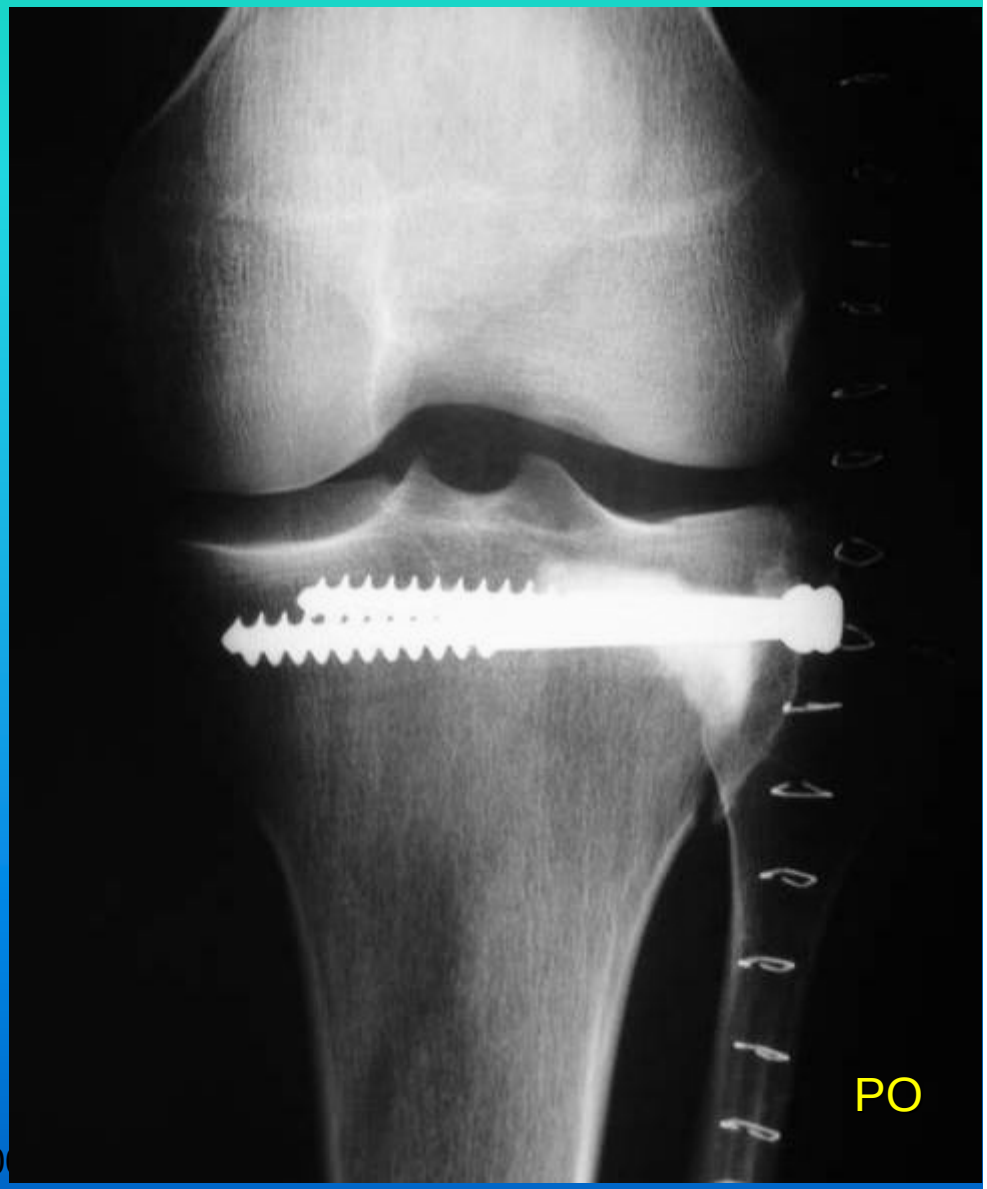
24 à 70 ans

Schatzker 2 et 3 = 75% des cas

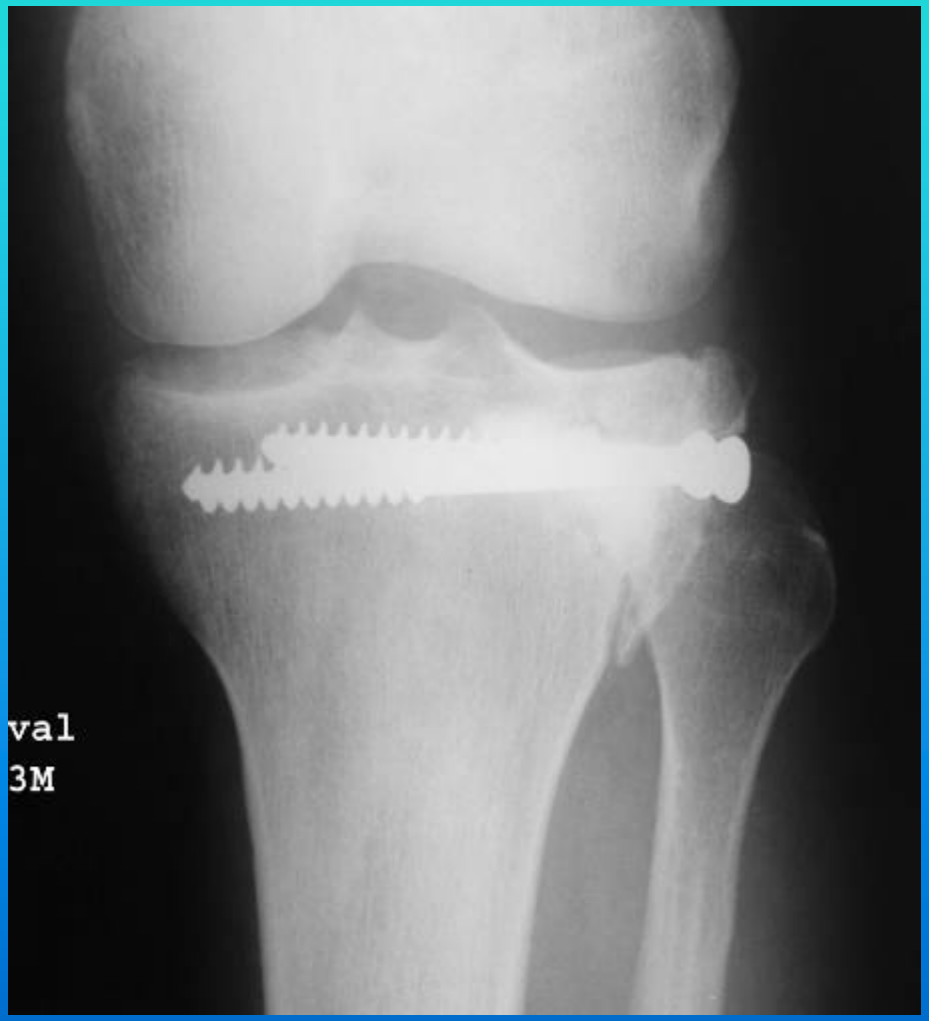


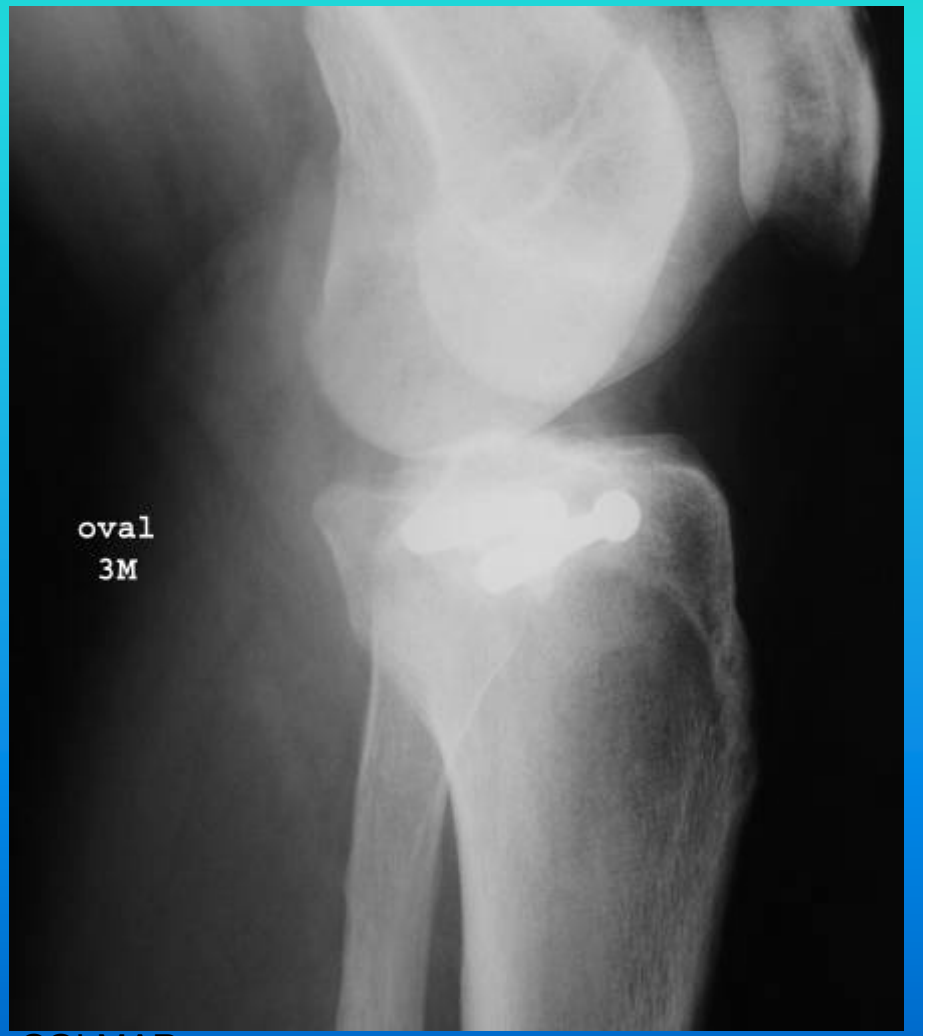
Mr Oval. 29 Y

schatzker 2

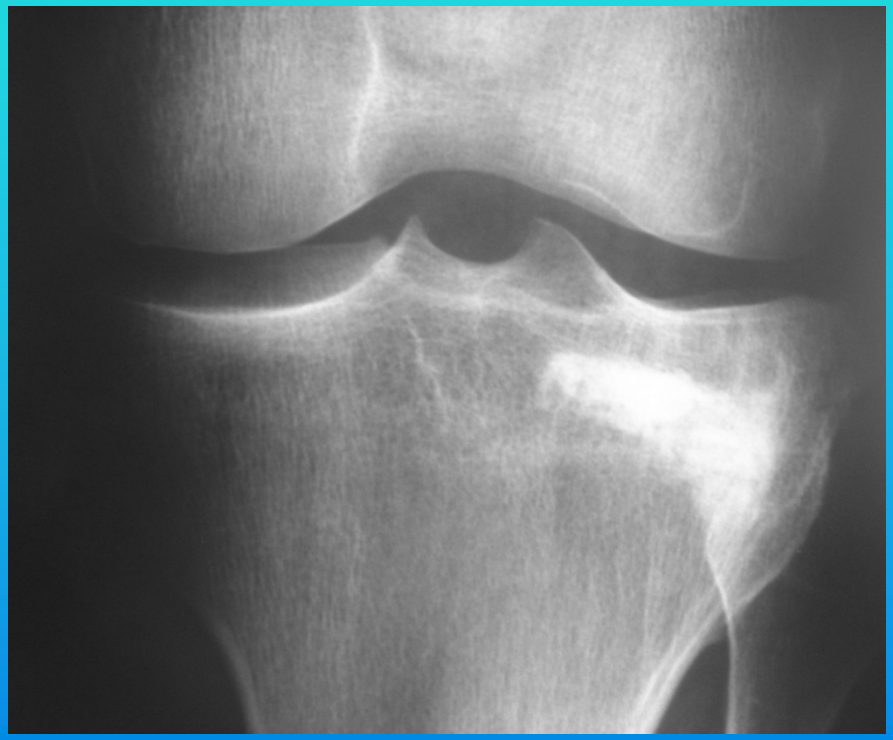


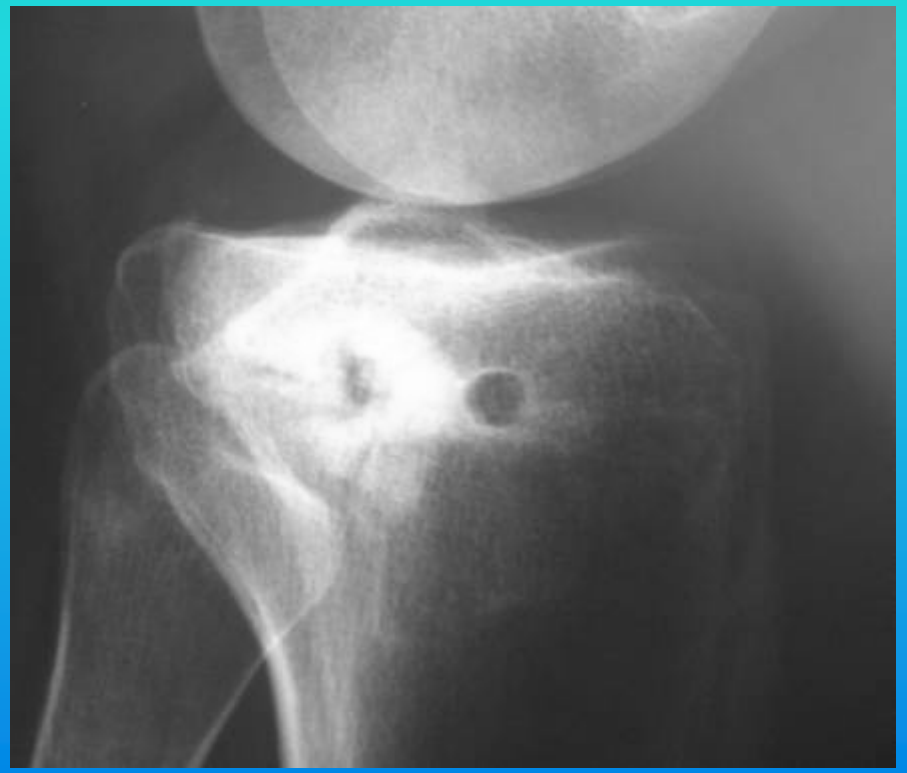
Mr Oval. 3 M





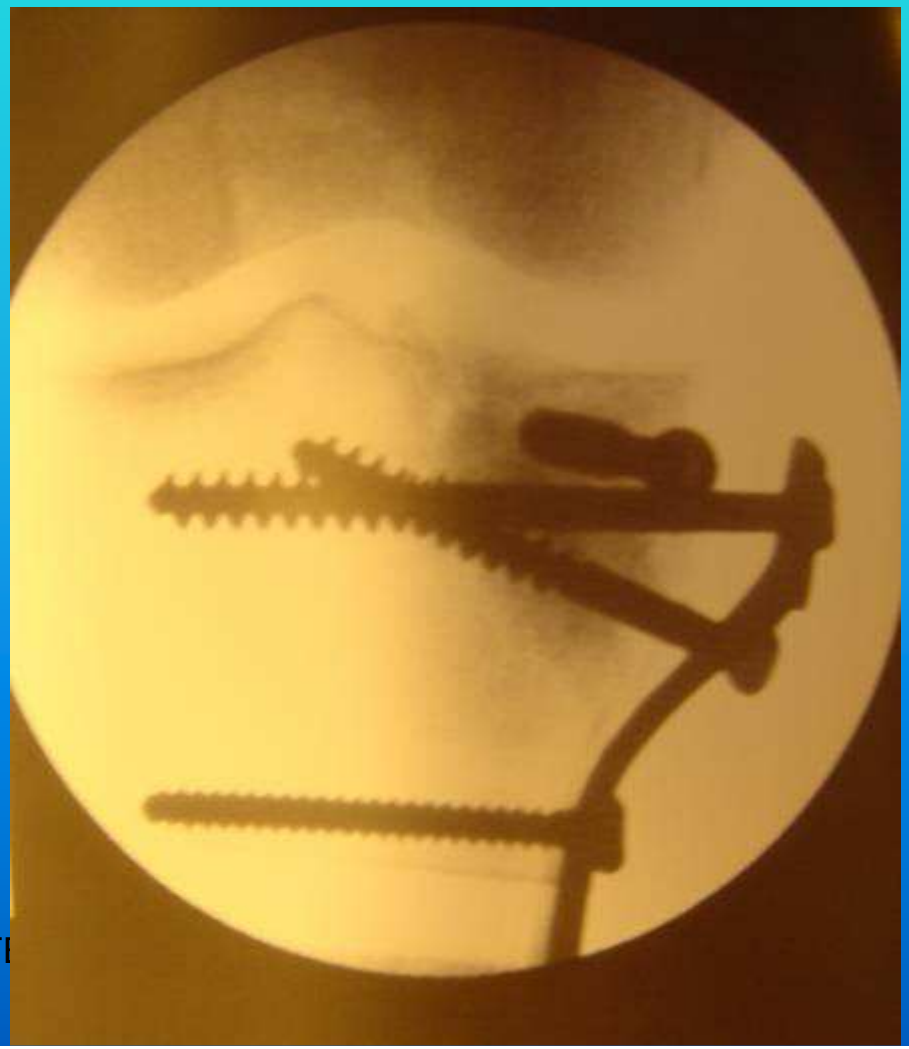
Mr Oval. 2 Y



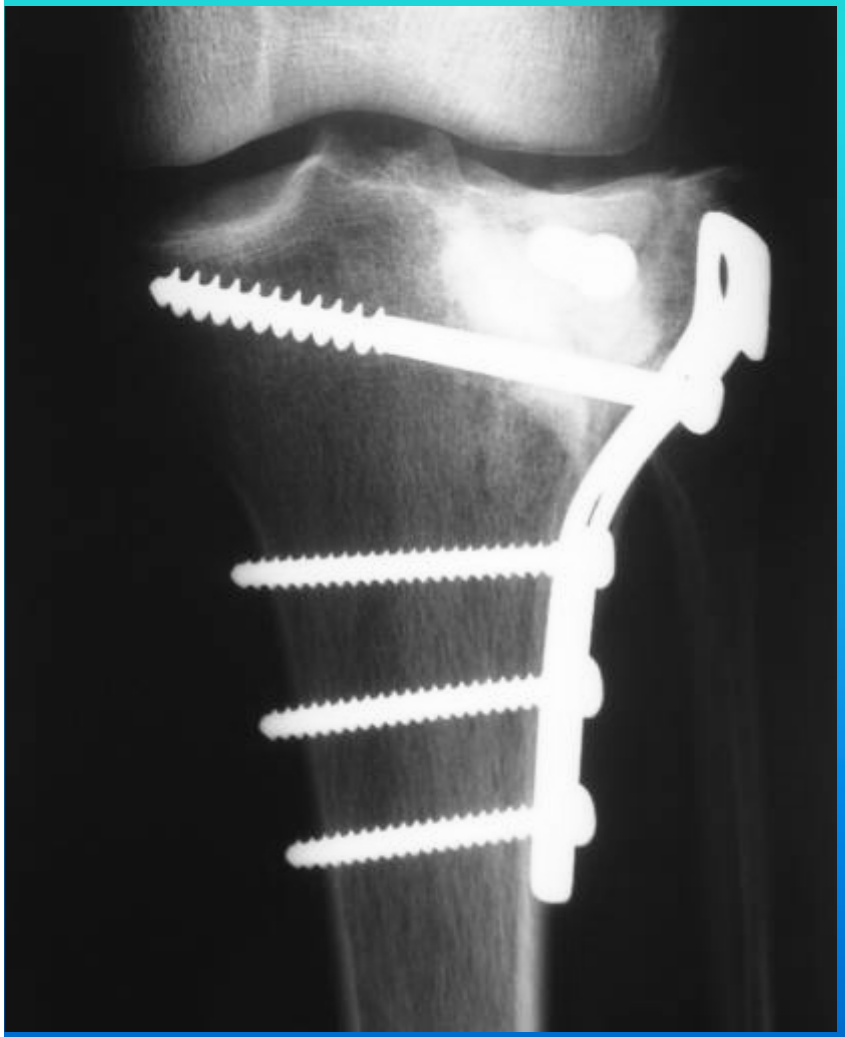


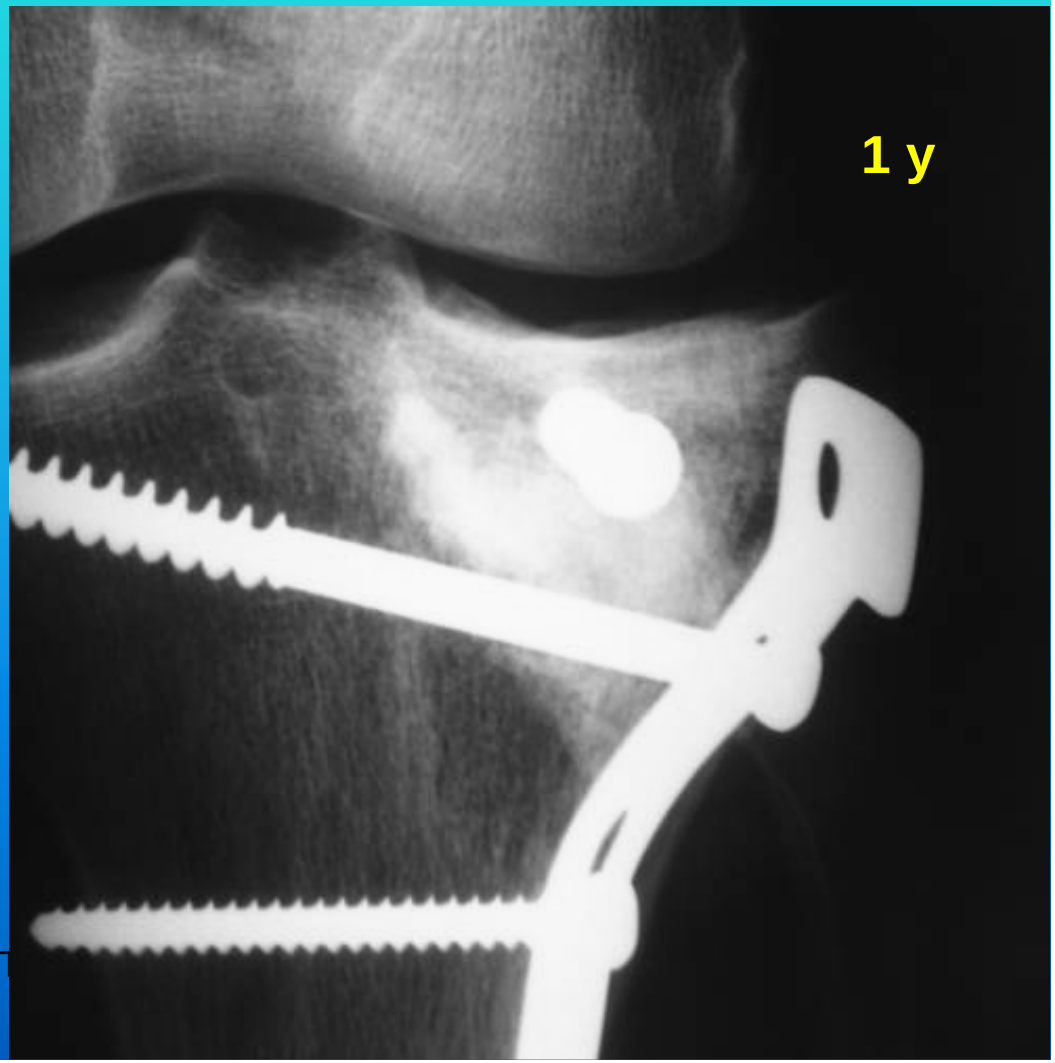
Mr Flei 24 ans

schatzker 2



Mr Flei

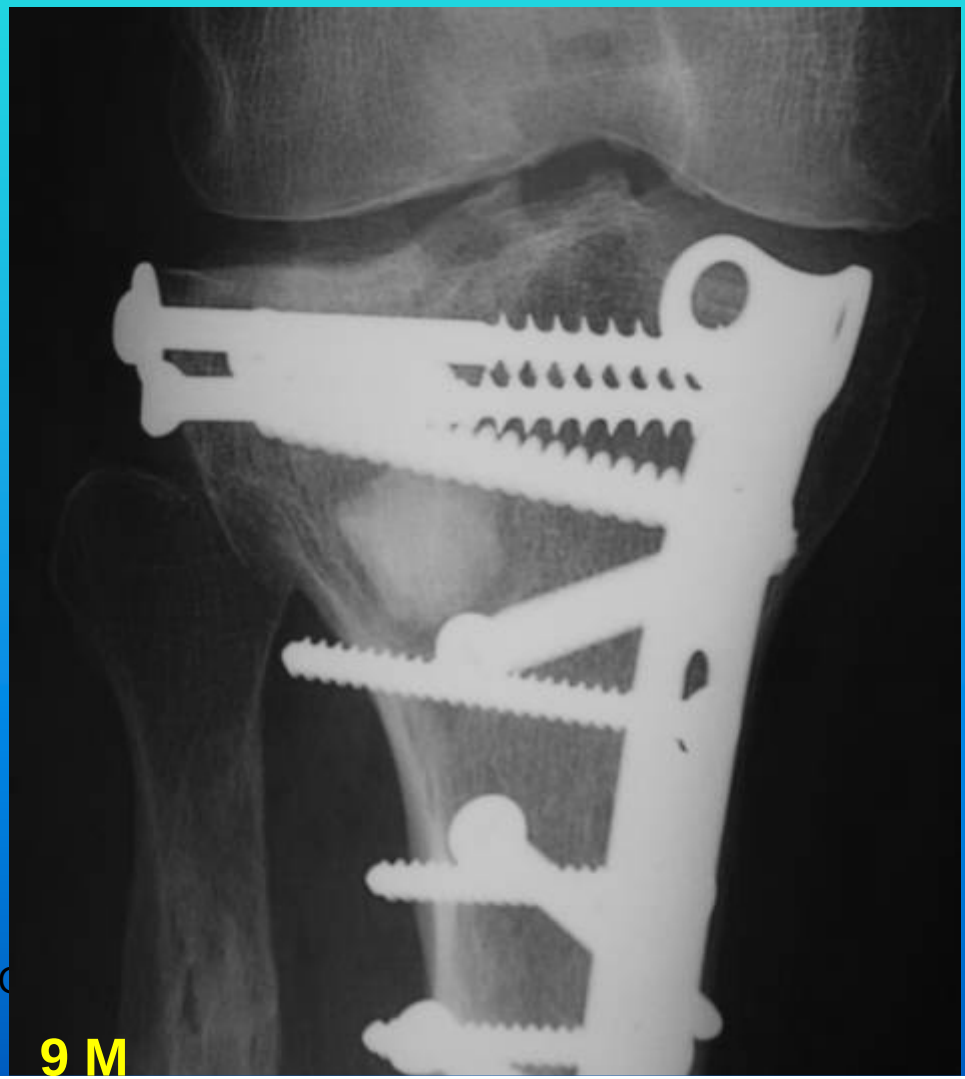




Mme Klei 48 ans *schatzker 3*

Mr Daes 58 ans

schatzker 6

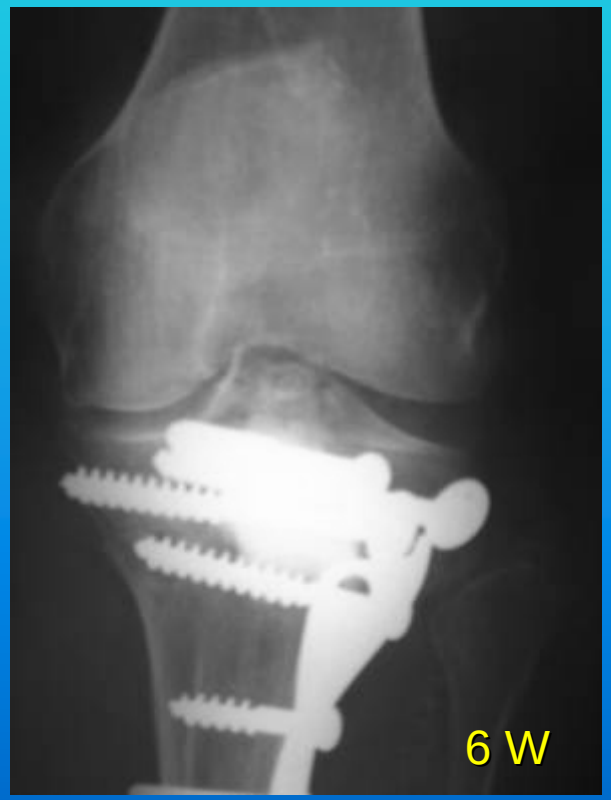


sc

9 M

Complication

Mme Stah, 70 ans, dialysée, *schatzker 5*



Résultats de la série

- Raccourcissement temps opératoire
- Pas de complication lié au CPC
- Pas de complication mécanique si respect des indications

Littérature

- Dickson KF (2002):The use of BoneSource hydroxyapatite cement for traumatic metaphyseal bone void filling. *J Trauma*

  Bone Source, 38 patients, multilocalisations, 83% maintien de réduction contre 67% avec autogreffe, résultat clinique bon 69% contre 57%

- Lobenhoffer P (2002):Use of an injectable calcium phosphate bone cement in the treatment of tibial plateau fractures. *J Orthop Trauma*

  36 cas B2, B3 et C3, prospectif, 1 à FF, 2 écoulement stériles, 2 pertes partielles de réduction mais appui entre 1 et 4 semaines.

Littérature

- J. F. Keating (2002):Minimal internal fixation and Calciumphosphate cement in the treatment of fractures of the tibial plateau. *J Bone Joint Surg [Br]*

  49 fractures, resultats bon ou excellent 92%, un demontage plus infection profonde

- Simpson (2005):Outcome of tibial plateau fractures managed with calcium phosphate cement. *Injury*

  matched-pair analysis, 13 pairs, Norian SRS vs greffe autologue,

  moyen déplacement 0,7mm (Norian) vs 4mm autogreffe.

  pas de complication lié au CPC

CONCLUSION

- Pas d’effects secondaires
- Bonne stabilité biomechanique
  - Aléger l’ostéosynthèse
  - Retour à l’appui plus rapide
- Moins iatrogène